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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,456	12/06/2000	Kenneth L. Levy	P0249	1278
23735	7590	02/10/2006		
DIGIMARC CORPORATION 9405 SW GEMINI DRIVE BEAVERTON, OR 97008				
EXAMINER POLTORAK, PIOTR				
ART UNIT 2134				
PAPER NUMBER				
DATE MAILED: 02/10/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/731,456

Applicant(s)

LEVY ET AL.

Examiner

Peter Poltorak

Art Unit

2134

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37.CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. In view of applicant remarks in the Appeal Brief filed on 11/25/05, PROSECUTION IS HEREBY REOPENED.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

2. Claims 1-20 have been examined.

Priority

3. Acknowledgment is made of applicant's claim for priority based on a US Provisional Application 60/232,163 filed on September 11, 2000

Drawings

4. The drawings are objected to because Fig. 2 object 124 label: "Compute average ratio within each block" is not understood.
5. Also, the drawings are objected to under 37 CFR 1.83(a) as not showing every feature of the invention specified in the claims. Therefore, the "correlating a

calibration signal with a media signal suspected of carrying a watermark to determine orientation parameters describing orientation of the media signal at embedding of the watermark” as disclosed in claim 18 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that applicant regards as the invention.
7. Claim 1 recites: "adjusting a relationship between selected frequency coefficients to a reference value such that the alteration to the media signal to be detected alters the relationship".
8. It is not clear what is the subject of detection: the alteration or the media signal. For purposes of further examination the phrase is treated as though it is the alteration that is to be detected.
9. Claims 2-6 are rejected by virtue of their dependence.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-2, 4-5, 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by

Fridrich (Jiri Fridrich, "Combining low-frequency and spread spectrum watermarking", Proc. SPIE Int. Symposium on Optical Science, Engineering, and Instrumentations, San Diego, July 1998).

11. As per claim 1 *Fridrich* teaches transforming at least a portion of the media signal into a set of frequency coefficients in a frequency domain (*Fridrich*, "Abstract").
12. It is clear from § 2 in the "Introduction" that the alteration to the media signal is to be detected (*watermark is to be read and decoded*) and *Fridrich* teaches that adjusting a relationship between selected frequency coefficients to a reference value such that the alteration to the media signal to be detected alters the relationship (*e.g. Fridrich*, "Oblivious Low-Frequency watermarking", § 2, "Frequency-based spread spectrum", § 2 *etc.*).
13. Claims 7-8 are substantially equivalent to claim 1; therefore claims 7-8 are similarly rejected.
14. As per claim 2 *Fridrich* teaches that the media signal is an image signal (*Fridrich*, "Abstract").
15. As per claim 4-5 not only *Fridrich* teach that the relationship comprises a ratio between a selected coefficient and one or more neighboring coefficients (and an average of neighboring coefficients) (*e.g. Fridrich*, "Oblivious Low-Frequency watermarking", § 2) but the limitations of the claim are simply inherent. The frequency coefficients as taught by *Fridrich* inherently comprise ratio between any two or more coefficients. The ratio exists when coefficients are identical (in this case the ratio equals to 1).
16. Claims 1-2, 4, 7-14 and 18-20 are rejected under 35 U.S.C. 102(a) as being anticipated by *Tsekeridou et al.* (*S. Tsekeridou and I. Pitas*, "Wavelet-based self-similar watermarking for still images, ISCAS 2000, IEEE, May 2000).

17. As per claims 18, 10-14 *Tsekeridou et al.* teach correlating a calibration signal (*watermark*) with a media signal suspected of carrying a watermark (*transformed watermarked image*) to determine orientation parameters describing orientation of the media signal at embedding of the watermark, where the calibration signal includes a set of peaks at selected frequency coefficients (*Tsekeridou et al.*, “*Watermark detection*”, §1-2, *each frequency orientation is selected*). Furthermore, *Tsekeridou et al.* teach orientating parameters and evaluate whether the media signal has been altered after the embedding by examining signal peaks at selected frequency coefficients in the media signal (*Tsekeridou et al.*, “*Watermark detection*”, *paragraphs following §2*).
18. The unit correlating the calibration signal with a media signal reads on a decoder and the unit that orients parameters and evaluate whether the media signal has been altered reads on an analyzer in *Tsekeridou et al.*’s invention.
19. *Tsekeridou et al.* explicitly suggests that the invention of detection of the watermark applies to media signals that have been altered (*geometric transformations: compression, scaling, cropping and rotation etc.*, *Tsekeridou et al.*, “*Abstract*”). The geometric transformation affects (degrades) the signal peaks and detection of the original watermark in a geometrically transformed image establishes the fact that the signal has been altered.
20. As per claims 1 and 7-8 the calibration signal reads on “a reference value” and as per claim 9 the calibration signal values read on a threshold.

21. As per claim 2 *Tsekeridou et al.*'s invention is directed towards image signal (e.g. *Title, Fig. 4 etc.*) and as per claim 4 there are inherently ratios between any two coefficients. The ratio exists even when two neighboring coefficients are identical (in this case the ratio equals to 1).
22. As per claim 19 the analyzer uses the results of the detector.
23. The limitations of claim 20 are disclosed in "Simulation results" section (*Tsekeridou et al.*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Fridrich (Jiri Fridrich, "Combining low-frequency and spread spectrum watermarking", Proc. SPIE Int. Symposium on Optical Science, Engineering, and Instrumentations, San Diego, July 1998* in view of *Fridrich2 (Jiri Fridrich, "Image Watermarking for tamper detection")*.
25. *Fridrich* teaches modifying a media signal as discussed above and embedding a calibration signal into the media signal (*Fridrich, "Introduction", § 5*).
26. *Fridrich* does not explicitly teach embedding a calibration signal into the media signal to enable a detector to compensate for changes in scale or translation of the media signal after being adjusted according to the relationship.

27. *Fridrich 2* teach embedding a calibration signal into the media signal to enable a detector to compensate for changes in scale or translation of the media signal after being adjusted according to the relationship (*Fridrich 2*, “*Improvements and future directions* § 2). It would have been obvious to one of ordinary skill in the art at the time of applicant’s invention to include embedding a calibration signal into the media signal to enable a detector to compensate for changes in scale or translation of the media signal after being adjusted according to the relationship as taught by *Fridrich 2*. One of ordinary skill in the art would have been motivated to perform such a modification in order to improve the efficiency of the process of tamper detection.
28. Claims 10, 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Zhu* (*Wenwu Zhu, Zixiang Xiong and Ya-Qin Zhang* “*Multiresolution Watermarking for Images and Video*”, *IEEE Transactions on circuits and systems for video technology*, vol. 9, No 4, June 1999) in view of *Kundur et al.* (*Deepa Kundur and Dimitrios Hatzinakos*, “*Digital Watermarking for telltale tamper proofing and authentications*”, *proceedings of the IEEE*, Vol. 87, No. 7, July 1999).
29. As per claim 10 *Zhu et al.* teach embedding watermark in frequency domain using coefficient (*Introduction*, col.1), which reads on the media signal selected frequencies have been previously modified. Although, *Zhu et al.* do not explicitly teach that the signal has been previously modified to included peaks at the selected frequencies in the “Experiments” section *Zhu et al.* teach detection of the original watermark by examining peak values that clearly suggests that such an embedding occurred.

30. *Zhu et al.* teach do not explicitly teach determining based on degradation of the signal peaks whether the media signal has been altered.

31. As evident from *Zhu et al.*'s teaching any degradation of the signal peaks effects the watermark, however; *Zhu et al.* stops short from the explicit statement that based on the degradation it is determined that the media signal has been altered. *Kundur et al.* explicitly teach determining based on degradation of the watermark whether the media signal has been altered (*Kundur et al.*, "*The digital Watermarking Approach*", pg. 1169).

32. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate *Zhu et al.*'s teaching in determining whether the media signal has been altered as taught by *Kundur et al.* One of ordinary skill in the art would have been motivated to perform such a modification in order to tamper proofing of media signals.

33. Claim 17 is substantially equivalent to claim 10; therefore claim 17 is similarly rejected.

34. As per claims 14-16 *Zhu et al.* digital watermarking process is applied to an image or video media (*Zhu et al.*, "*Capacity issues in digital image watermarking*") and discusses MPEG-2 video watermarking (*Zhu et al.*, "*Introduction*").

35. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Fridrich (Jiri Fridrich*, "*Combining low-frequency and spread spectrum watermarking*", *Proc. SPIE Int. Symposium on Optical Science, Engineering, and Instrumentations, San Diego, July 1998*) in view of *Wolfgang et al. (U.S. Patent No. 6625295)* or over *Tsekeridou*

et al. (S. Tsekeridou and I. Pitas, "Wavelet-based self-similar watermarking for still images, ISCAS 2000, IEEE, May 2000) in view of Wolfgang et al. (U.S. Patent No. 6625295).

36. *Fridrich or Tsekeridou et al.* teach method of authenticating a media signal as discussed above.

37. *Fridrich or Tsekeridou et al.* do not teach the alteration to be detected is scanning, printing or photocopying the image signal.

38. *Wolfgang et al.* teach that information such as copyrighted image for which protection is sought could be placed onto computer system through scanning (*Wolfgang et al.*, pg. 5 lines 48-61).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate *Fridrich or Tsekeridou et al.* invention to scanned images as taught by *Wolfgang et al.* One of ordinary skill in the art would have been motivated to perform such a modification in order to identify modification in printed images.

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Gerhard C. Langelaar, Iwan Setyawan and Reginald L. Lagendijk "Watermarking Digital Image and Video Data", IEEE Signal Processing Magazine, September 2000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Poltorak whose telephone number is (571)272-3840. The examiner can normally be reached Monday through Thursday from 9:00 a.m. to 4:00 p.m. and alternate Fridays from 9:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Morse can be reached on (571) 272-3838. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


2/3/06

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:


KIM VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100